

## Table of Contents

<b>Section 1. Executive Summary .....</b>	<b>1</b>
<b>Section 2. Acronyms .....</b>	<b>3</b>
<b>Section 3. Introduction.....</b>	<b>5</b>
3.1. Project History .....	5
3.2. Location .....	5
3.3. Pipeline Route Summary .....	6
3.3.2. Selected Route .....	9
<b>Section 4. Pipeline Route Description.....</b>	<b>11</b>
4.1. General Route .....	11
4.1.1. Land Ownership.....	13
4.1.2. Physical Environment.....	14
4.1.3. Climate.....	15
4.1.4. Active Fault Crossings.....	15
4.2. Origin – Glennallen.....	16
4.2.1. Typical Compressor Station.....	17
4.2.2. Typical NGL Plant.....	17
4.2.3. Power Generation Facility .....	20
4.2.4. Possible Layout of Inlet Facilities.....	20
4.2.5. Site Soil Conditions .....	21
4.2.6. Land Ownership.....	22
4.3. Terminus – Palmer .....	22
4.3.1. Possible Layout of Outlet Facilities.....	22
4.3.2. Site Soil Conditions .....	23
4.3.3. Land Ownership.....	24
<b>Section 5. Environmental.....</b>	<b>25</b>
5.1. River and Stream Crossings .....	25
5.2. Vegetation .....	27
5.3. Wetlands .....	27
5.4. Erosion Control.....	29
5.4.1. Trenching .....	29
5.4.2. Bank Stabilization.....	29
5.5. Right-of-Way Restoration.....	29
5.5.1. Revegetation .....	29
5.6. Water Sources .....	30
5.6.1. Hydrology .....	30
5.6.2. Impacts to Waterbodies.....	30
5.6.3. Water Quality.....	30
5.7. Spill Prevention.....	31
5.7.1. Hydrotesting.....	31
5.8. Fish and Wildlife.....	31
5.8.1. Mammals.....	31
5.8.2. Avian Species.....	33

5.8.3. Threatened and Endangered Species .....	33
5.8.4. Fish.....	34
5.9. Historical and Archeological Preservation .....	35
<b>Section 6. Public Outreach .....</b>	<b>37</b>
<b>Section 7. Pipeline Design.....</b>	<b>39</b>
7.1. Codes, Criteria, and Standards.....	39
7.2. Class Location.....	40
7.3. Pipeline Wall Thickness .....	40
7.4. Valves .....	40
7.5. Corrosion Control Systems .....	40
7.5.1. Protective Coating.....	41
7.5.2. Cathodic Control Systems.....	41
<b>Section 8. Typical Construction Methods .....</b>	<b>43</b>
8.1. Typical Buried Modes.....	43
8.2. Right-of-Way Preparation.....	44
8.2.1. Winter Construction.....	44
8.2.2. Summer Construction .....	45
8.3. Crossings.....	47
8.3.1. Major Roads and Railroads.....	47
8.3.2. Minor Roads and Driveways .....	47
8.3.3. Rivers and Streams .....	48
8.3.4. Existing Utilities .....	49
8.4. Traffic Impediments .....	49
<b>Section 9. Construction .....</b>	<b>51</b>
9.1. Schedule.....	51
9.2. Cost Estimate .....	53
9.3. Materials .....	57
9.3.1. Long Lead Items .....	57
9.3.2. Mining Sites .....	57
9.3.3. Material and Equipment Storage .....	59
9.4. Logistics.....	60
9.5. Access .....	60
<b>Section 10. Quality Assurance .....</b>	<b>62</b>
10.1. Quality Control Plan.....	62
10.2. Inspection Plan .....	63
10.3. Testing Plan .....	64
<b>Section 11. Financing Requirements.....</b>	<b>66</b>
<b>Section 12. References .....</b>	<b>68</b>

## Figures

Figure 3.1: Location Map .....	6
Figure 4.1: Pipeline Route.....	11
Figure 4.2: Castle and Caribou Fault Locations.....	16
Figure 4.3: Typical Process Flow Diagram, Compressor Station with Refrigeration.....	17
Figure 4.4: Conceptual NGL Facility Layout .....	18
Figure 4.5: Conceptual Origination Connection .....	21
Figure 4.6: Schematic Terminus Facility Layout .....	23
Figure 7.1: Cathodic Protection Systems Schematic .....	42
Figure 8.1: Typical Trench Detail .....	43
Figure 8.2: Typical Construction from Snow/Ice Workpad .....	45
Figure 8.3: Typical Construction from Graded Workpad .....	45
Figure 8.4: Typical Construction from Graded Side Hill Cut .....	46
Figure 8.5: Typical Construction from Mat on Graded Workpad .....	46
Figure 8.6: Typical Major Road/Railroad Crossing .....	47
Figure 8.7: Typical Minor Road/Driveway Crossing .....	48
Figure 8.8: Typical Stream Crossing.....	49

## Tables

Table 1.1: Abbreviated Construction Cost Summary .....	2
Table 4.1: Land Ownership Line List.....	13
Table 5.1: River and Stream Crossings .....	26
Table 5.2: Wetlands Location Data .....	28
Table 5.3: List of Mammals Within the Project Area .....	32
Table 5.4: Sensitive Species List .....	34
Table 9.1: Construction Cost Summary .....	53
Table 9.2: Material Exploration Sites .....	59

## Appendices

### Appendix A – Preliminary Alignment Drawings

### Appendix B - Cost Estimate

### Appendix C – Construction Schedule